either for basing hypotheses on an inadequate understanding of that which is actually known or for presenting conjectures in the form of established facts.

—*G. S. Miller.*

Shaw, William T. THE COST OF A SQUIRREL AND SQUIRREL CONTROL. State College of Washington, Agr. Exp. Stat., Pop. Bull. no. 118, pp. 1–19, 11 figs. January, 1920.

Estimates of damage done to growing crops by noxious rodents are good so far as they go, but inevitably leave much to be desired. So far as known Professor Shaw is the first American author to present a quantitative study of damage done by a destructive rodent in growing grain. The rodent dealt with is the common Columbian ground squirrel (*Citellus columbianus*) of eastern Washington and neighboring states; the grain was wheat of the variety known as Hybrid 128; the location Pullman, Washington. Wheat was sown on a typical piece of ground in October, 1918. Before winter a part of the land was divided into sections 50 by 50 feet which were fenced to retain the squirrels. Immediately adjoining each squirrel plot was a check plot of similar size, slope, and soil. Photographs of the growing grain and of the amount of wheat and straw actually harvested make graphic the devastation in the squirrel-infested plots. Forty-one pounds of wheat were obtained from 500 square feet of the check plot as compared with four pounds from an equal area of the squirrel-infested plot. Similarly nine sheaves of straw were harvested from the check plot as against one sheaf from the squirrel-infested plot. The average destruction per squirrel in the experiments described was found to be 50⅓ pounds . . . . "which at a price of $2.10 per bushel for hard winter wheat was worth $1.76." The number of squirrels per acre varies but where uncontrolled may be as high as 25. If each squirrel does $1.76 damage annually the burden on the community is seen to be enormous.

Following the description of the experiments a number of interesting facts are given regarding the life history of the species. The handsome illustrations of young in various stages of growth, of the hibernating squirrel, and of the dens admirably supplement the discussion in the text. Different means of squirrel-control, namely poison, gas, trapping and exclusion, are taken up in the final section of the paper.

Two points combine to make this paper of extraordinary value: the thorough life history studies on which it is based, and the quantitative methods used.

—*Walter P. Taylor.*

B[allou], H. A. RATS IN THE WEST INDIES. Agricultural News, Barbados, vol. 18, pp. 406, 407. December 27, 1919.

"Rats continue to do a considerable amount of damage to sugar canes in the West Indies, in spite of the activities of the mongoose. In Jamaica, it would appear that rats are pests of the first importance. A glance through the indexes of the volumes of the Journal of the Agricultural Society will reveal numerous references to rats in recent years. These relate to short articles on the damage done by rats, to brief notes by the editor, from correspondents on the importance of taking all possible action against rats, etc. There are also notes on rat traps, rat virus, and rat poisons. In one volume—that for 1908, for instance—there appear thirty-one page references to these headings.